

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

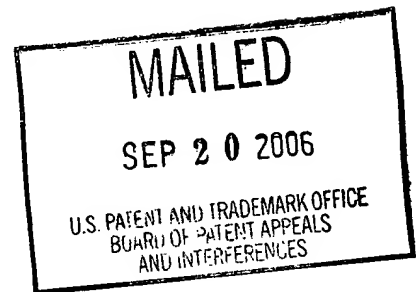
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte DOUGLAS M. BLAIR, JOHN J. GREFENSTETTE,
H.HADON NASH, DALE I. NEWFIELD, and DUSTIN M. LUCIEN

Appeal No. 2006-2702
Application No. 09/881,234

ON BRIEF



Before SCHEINER, ADAMS, and GRIMES, Administrative Patent Judges.

ADAMS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-23, which are all the claims pending in the application.

Claim 1 is illustrative of the subject matter on appeal and is reproduced below:

1. A method of comparing a query dataset N with a subject dataset M, comprising:

dividing said query dataset N into n_N data elements having a size within a specified range;

dividing said subject dataset M into n_M data elements having a size within said specified range;

determining a number of tasks for an entire comparison of datasets N and M as $n_N \times n_M$;

sending all data elements and task definitions to a master central processing unit (CPU) of a master-slave distributed computing platform,

wherein task definitions comprise at least one comparison parameter, at least one executable element capable of performing comparisons, a query data element identification(ID)/descriptor, and a subject data element ID/descriptor, and

wherein data elements are sent alternately from query and subject data elements;

sending a task definition for each task from the master CPU to one of a plurality of slave CPUs when all parts of a task definition and data elements referenced by said task definition are available at said master CPU;

sending data elements referenced by said task definition to said slave CPU;

performing each task on a slave CPU; and

returning task results for each task to said master CPU.

The references relied upon by the examiner are:

Reed et al. (Reed)	5,862,325	Jan. 19, 1999
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Smith et al. (Smith), "BCM Search Launcher – An Integrated Interface to Molecular Biology Data Base Search and Analysis Services Available on the World Wide Web," *Genome Methods*, Vol. 6, pp. 454-462 (1996)

Altschul et al. (Altschul), "Basic Local Alignment Search Tool," J. Molec. Biol., Vol. 215, No. 3, pp. 403-410 (1990)

GROUND OF REJECTION

Claims 1-23 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite in the recitation of the term “task definition.”

Claims 1, 4, 6-13, and 18-23 stand rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Smith, Altschul, and Reed.

We reverse.

DISCUSSION

Definiteness:

Claims 1-23 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite in the recitation of the term “task definition.” The examiner finds (Answer, page 3), “[c]laims 1 (line 18) and 13 (lines 22-23) recite the phrase ‘said task definition’ which is rejected due to the lack of clear antecedent basis.

Several task definitions are mentioned previously in these claims so it is unclear to which one this phrase is referring.” According to the examiner (id.), “[c]laims 2-12 and 14-23 are also rejected due to their direct or indirect dependency from claims 1 and [1]3.”

While appellants admit (Brief, page 7), “the claim language is not necessarily as clear as it could be,” appellants assert (Brief, page 8), “the claim language is sufficiently clear to refer to the immediately preceding form of the term ‘all parts of a task definition’ as used in the term ‘all parts of a task definition and data elements referenced by said task definition.’” The examiner is not persuaded by appellants’ argument, finding instead (Answer, page 10) that “‘said task definition’ is equally applicable to be referring to other ‘task definition’ recitations previously found in the claims, and ‘said task definition’ does not clearly differentiate the limitation to only include the immediately preceding form of the phrase that [a]ppellants intend as antecedent basis.”

As set forth in the Manual of Patent Examining Procedure § 2173.05(e), 8th ed. Rev. 3, August 2005, “the failure to provide explicit antecedent basis for terms does not always render a claim indefinite.” Instead, the legal standard for indefiniteness under 35 U.S.C § 112, second paragraph, is whether a claim reasonably apprises those of skill in the art of its scope. See, Amgen Inc. v. Chugai Pharm. Co., 927 F.2d 1200, 1217, 18 USPQ2d 1016, 1030 (Fed. Cir. 1991).

As we understand the claims, “data elements and task definitions” are sent to a master central processing unit (CPU). When “all parts of a task definition” and the “data elements referenced by the task definition” are available at the master CPU the “task definition for each task” as well as the “data elements referenced by the task definition” are then sent from the master CPU to one of a plurality of slave CPUs. Therefore, we agree with appellants (Brief, page 8) that the phrase “said task definition,” as it appears, e.g., in line 18 of claim 1, refers “to the immediately preceding form of the term ‘all parts of a task definition’ as used in the term ‘all parts of a task definition and data elements referenced by said task definition.’”

Accordingly, we reverse the rejection of claims 1-23 under 35 U.S.C. § 112, second paragraph, as being indefinite in the recitation of the term “task definition.”

Obviousness:

Claims 1, 4, 6-13, and 18-23 stand rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Smith, Altschul and Reed.

The examiner finds (Answer, page 4) Smith teaches “an integrated set of World Wide Web pages that organize nucleic acid sequence searches and analyses available by function and provide a single entry for related searches . . . which represents a ‘system’¹” According to the examiner (Answer, page 4), “[t]his system provides a method of performing different searches for a given query sequence (query dataset N) with various sequence databases (i.e. BLAST database which represents subject dataset M) . . . which represents a method of comparing datasets.” In this regard, the examiner finds (Answer, page 5), Smith “describe[s] a sequence input field for nucleic acid searches . . . which is well known in the art to be divided into nucleotides (data elements).” According to the examiner (id.), “[t]he presence of an input field suggests that there is a size limitation with a specified range, which is necessarily more than zero but less than infinity.”

In addition, the examiner finds that Smith teaches “BLAST nucleic acid sequence searches” of an EST (expressed sequence tag) database. According to the examiner (id.), “[t]his EST^[2] . . . database subset represents a

¹ According to the examiner the online version of the Merriam-Webster dictionary (www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=system), defines the term “system” “as an integrating group of items forming a unified whole as well as an organization forming a network especially for distributing something serving a common purpose.”

² According to the examiner (Answer, page 5), the online “Genome Glossary” (www.ornl.gov/sci/techresources/human_Genome/glossary/glossary_e.shtml), defines the term “EST” “as a short (size) strand of DNA that is part of a cDNA molecule.”

division of the BLAST database (subject dataset) which has a size within a specified range, as stated in instant claims 1 and 13.”

The examiner also finds (id.) Smith teaches the use of

the Internet allowing for communication between remote sites and to promote a distributed information space by filling out a HTML form (user input query) on a web page (at a master CPU (central processing unit)), launching a search at a remote site (slave CPU), returning results for further processing by the BCM Search Launcher server (another slave CPU), and presenting results to the user (from original master CPU)

According to the examiner (id.), Webopedia online³ defines the “master-slave” relationship

as “an architecture in which one device (master) controls one or more other devices (the slaves), the description provided in the sentence above represents sending information to a master CPU of a master-slave distributed computing platform (via query input) by sending data elements referenced by a task definition to said slave CPU, performing each task (i.e. comparison search and further processing) on a slave CPU and returning task results for each task to said master CPU.[”]

In this regard, the examiner finds (Answer, bridging sentence, pages 5-6) Smith teaches the use of “a plurality of servers (slave CPUs) that can return results to the user’s system (master CPU) with additional links to auxiliary information that was initiated from a single entry page” According to the examiner (Answer, page 6), Smith teaches that one or more query parameter values may be specified “which represents more than one data element dataset that can be a query or subject.”

According to the examiner (Answer, bridging paragraph, pages 8-9), Smith teaches that “sequence analysis services are extremely useful for molecular

³ www.webopedia.com/TERM/M/master_slave.html.

biologists to allow access to the ever-expanding sequence data bases without requiring copious local data base storage, frequent data base updates, the cost of expensive and sophisticated hardware and software, and the cost and effort of continuous system maintenance” The examiner finds, however, that Smith teaches “that the individual WWW server sites scattered throughout the Web hinders their efficient use” Answer, page 9. According to the examiner (id.), Smith teaches that “the BCM Search Launcher addresses these limitations by providing an improved interface to simplify access and improve analysis resources”

The examiner finds, however, that Smith “does not describe compressing and uncompressing data, determining a number of tasks as $n_N \times n_M$, or looping processes.” Answer, page 7. To make up for this deficiency in Smith, the examiner relies on Altschul and Reed.

The examiner relies on Altschul to teach that a database can be compressed “by packing 4 nucleotides into a single byte and using a table to delimit the boundaries between adjacent sequences” Id. In this regard, the examiner finds (id.) Altschul “describe[s] beginning with a matrix of similarity scores for all possible pairs of residues . . . which represents determining the number of tasks for an entire comparison of two datasets.” The examiner also finds (id.) Altschul

Describe[s] performing BLAST with two random sequences (data sets N and M) of lengths m and n in order to determine the probability of finding a segment pair with a score greater than S (cut off score . . .) where $y = Kmn e^{-\lambda S}$. . . which represents determination of a number of tasks or points in a matrix in a comparison of two

datasets (i.e. N and M) involving a multiplication of data elements $n_N \times n_M$ as, stated in instant claims 1 and 13.

According to the examiner (id.), Altschul teaches that “the sequence segments can be of any length . . . or certain short sequences thus having a specified range” The examiner recognizes, however, that like Smith, Altschul does “not describe uncompressing data or looping processes.”

The examiner relies on Reed to make up for this deficiency in the combination of Smith and Altschul. According to the examiner (Answer, page 8), Reed describes “a system and methods that coordinate the transfer of data, metadata, and instructions between databases to control and process communications . . . which represents a separation or stripping of metadata from data.” In this regard, the examiner finds (id.) Reed teaches that “this transfer of metadata and methods allow for the control by the provider and consumer of the types and contents of information subsequently transferred . . . which represents storing minimal information if so desired.” In addition, the examiner finds (id.) Reed teaches “compressing database, database query, or other file format using PKZIP . . . that represents packing data into an efficient structure using a redundancy reduction data compression method.”

In addition, the examiner finds (id.) Reed teaches “corresponding data, metadata, and instructions in the provider program can control and automate decryption and decompression of data . . .”; “communication networks that allow both parties to control, filter, store, index, and process communications from each other . . . which represents creating an index in an uncompressed manner”; and “querying a provider database and loops through each communication object

instance (data) which is to be published and which are read . . . which represents a looping of data (i.e. query sequences) to perform setup, preprocessing, and table generation.” According to the examiner (id.), Reed’s “program begins a second loop through each recipient and using such recipient attributes and methods to generate and transmit a communications object instance for all recipients . . . which represents a looping of other data such as the looping of subject sequences.”

Based on this evidence, the examiner concludes (Answer, page 9),

A skilled artisan at the time of the invention would have been motivated to make improvements to analysis server sites, such as that stated by Smith . . . by adding additional features to further simplify access and improve analysis resources It would have been obvious to one having ordinary skill in the art at the time the invention was made to compress data (as stated by Altschul et al. and Reed et al.) and to use looping processes (as stated by Reed et al.) in the method of Smith et al., where the motivation would have been to offer enhanced, integrated, easy-to-use, and time-saving techniques to a large number of useful molecular biology database search and analysis services for organizing and improving access to these tools for genome researchers worldwide

In response, appellants argue (Brief, page 11) there is no suggestion or motivation to modify “the search launcher interface” of Smith with the combined teachings of Altschul and Reed. In this regard, appellants assert that Smith “is merely a WWW gateway to pre-existing search services” Brief, page 13. According to appellants (Brief, page 16), Smith “teaches the running of sequence-to-database searches, but fails to teach or fairly suggest numerous claim limitations required by all of the claims, including . . .” the requirement of

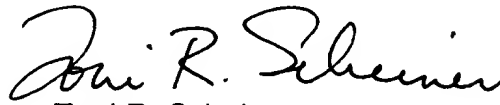
appellants' claimed invention "wherein data elements are sent alternately from query and subject data elements."

As we understand Smith, the reference teaches that "query" data elements are sent to a remote processor that already contains the "subject" data elements, e.g. a sequence database. See e.g., Smith, page 454, wherein Smith states that Internet "services are extremely useful for molecular biologists, as they allow access to the ever-expanding sequence data bases without requiring copious local data base storage. . . ." The examiner fails to identify, and we do not find, a teaching in Smith to suggest that "data elements are sent alternately from query and subject data elements", as is required by appellants' claimed invention. We remind the examiner that "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

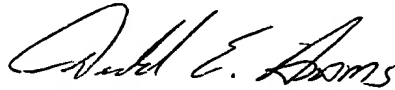
In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). For the foregoing reasons, it is our opinion that the examiner fails to provide the evidence necessary to establish a prima facie case of obviousness. If the examiner fails to establish a prima facie case, the rejection is improper and will be overturned. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

Accordingly, we reverse the rejection of claims 1, 4, 6-13, and 18-23 under 35 U.S.C. § 103 as being unpatentable over the combination of Smith, Altschul, and Reed.

REVERSED



Toni R. Scheiner
Administrative Patent Judge



Donald E. Adams
Administrative Patent Judge



Eric Grimes
Administrative Patent Judge

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